DRAFT

Wetland Resources Monitoring and Assessment Workshop

Albemarle-Pamlico National Estuary Partnership
10:00am – 4:00pm
January 24th, 2018

The Imperial Centre for Arts and Sciences
270 Gay Street, Rocky Mount, NC 27804

MEETING NOTES*

*Prepared by Kelsey Ellis. Minor editing by Dean Carpenter and Tim Ellis.

Present: Dean Carpenter (APNEP), Rick Savage (Carolina Wetlands Association), Kelsey Ellis (APNEP), Tim Ellis (APNEP), Trish Murphey (APNEP), Michelle Henichek (VA DEQ), Kirk Havens (VIMS), Mike Schafale (Natural Heritage Program), Ginny Baker (NC DWR), John Stanton (USFWS) Peter Kalla (USEPA)

Action Items (Taken from red text throughout transcript):

- **Dean Carpenter**: Organize webinar/conference call with team every other month going forward; organize webinar/conference call with team before 2/16 to follow up and settle on indicators; talk to STAC about idea of monitoring efforts focusing attention on tracking high-quality habitats to fulfill "protection" aspect of CCMP.
- **Tim Ellis & Kirk Havens**: Write 1-2 sentence statement for each "Tier I" indicator about how each will relate to management actions.
- **Mike Schafale, Rick Savage, Peter Kalla**: Review "Wetlands Community Super Index" and supporting indexes/indicators, and associated metrics.
- **Ginny Baker, Rick Savage, Mike Schafale**: Review "Herptofauna" indicator
    - **Mike Schafale**: Talk to Nathan Shepard, potential Alvin Braswell
- **John Stanton**: Take lead on clipping SALCC's Colonial Waterbird Survey data layer for APNEP region to be used for "Waterbird Index." Will work/coordinate with **Travis Wilson** (WRC) on this indicator.
- **Mike Schafale**: Review "butterflies" as metric for macroinvertebrates indicator. Who is doing it now? Is there any data available?
- **Mike Schafale**: Review "Wetland Landscape Fragmentation, Interior Area, and Conductivity" metric.
- **Kirk Havens/VIMS, Mike Schafale**: Kirk/VIMS will be mapping wetlands across the APNEP management area as part of MOU efforts. Mike also lead on "extent of wetland vegetation by type" metric.
- **Peter Kalla**: Review "Barriers to salt marsh regression" metric.
- **Michelle Henichek**: Lead on "Wetland Buffers" indicator.
- **John Stanton, Ginny Baker**: Review "wetland non-native invasive plant species frequency and abundance" indicator.
- **Tim Ellis**: Send John Stanton the NC Aquatic Nuisance Species Management Plan.
- **Rick Savage**: Send Mike Schafale the 2011 NWCA report.

Welcome and Introductions – Rick Savage
Team members introduce themselves. Dean welcomes everyone to the meeting and thanks everyone for attending. Reminds everyone that the team last met in February 2017, and last fall Tim and Dean created a guidance document for the monitoring & assessment teams (MATs). Purpose of the document is to give members an idea of where their team fit in the big picture, what APNEP hopes to accomplish in the next year or two. Team members can talk to Dean if they have any questions.

Dean – There are other efforts, such as USFWS' CAPES, that do similar things as APNEP – indicator development, etc. Hope to crosswalk APNEP's efforts with those of similar organizations (another example is SALCC). Reminds team that we should also link this team's efforts to North Carolina Wetlands Plan. Rick Savage – agrees.

Dean – When recruiting members for MATs, indicated that teams would meet no more frequently than semi-annually. While this team hasn't met since last February, 2018 is going to be much more active. We'll talk later in the day about when we'll have another in-person meeting. We plan to schedule a webinar every other month to facilitate progress.

Evaluation and Selection of Candidate Indicators and Metrics – Team
Dean – Discussion of indicators at last workshop, there was the need to get more information. We could very well be doing this again today. The first charge is to develop a set of indicators we can commit to, that APNEP partners can track. Second part is to select the top five or so metrics to get started by developing a monitoring strategy and/or assessment. All MATs by mid-February should come up with their core list of indicators. That'll give staff about a week to go through it before presenting them to APNEP's Science and Technical Advisory Committee (STAC). Here the STAC will be reviewing for consistency across teams, since we want a suite of indicators that covers the whole socioecological system. There will likely be a need for more information, suggest we engage team members not in this room to help and have a webinar/conference call before February 16 to settle on indicators.

Dean – Motivation for getting this done is that APNEP is going through a program evaluation this spring, last one was 2013. One of the challenges from the last review was to make progress in indicator development and monitoring strategy. We'd like to say that although APNEP isn't there yet but we're further along.

Peter Kalla – Is the date set for the EPA visit?

Dean – Staff will submit a package, EPA reviews it, then in mid-May, EPA team will come down here to meet with partners and people from the management conference.

Peter– Has date been set for STAC meeting?

Dean – March 2. Meeting was specifically scheduled in early March because APNEP director Bill Crowell said we need indicators by that time, settled on specific date at last STAC meeting. Much of the meeting will likely be indicator evaluation.

Dean – Any questions? No questions from team.

Rick Savage – The first thing we should do is look at the list of indicators again. Objective is to derive this core set of indicators, there are always ways to change it if we must. Shouldn't be too shy about making changes either.

Dean pulls up document with previous indicators. Created by Tim and Dean for all MATs. Many are indicators that really link to condition of the system, we'll also be talking about stressors. Important to link these to our ultimate goals and objectives. Overarching CCMP goals – humans, natural communities, water quality. More specificity – outcomes.

Dean – For review by the Wetland Resources MAT – community's goal, 4 indicators and 11 metrics associated with it. Differences between indicators and metrics are addressed by guidance document. Tried to crosswalk with previous efforts so as not to reinvent the wheel.

Kirk Havens – Clarification, you have your outcome and what would be useful is, what factors would be important to reach that outcome? What we're saying is that those 4 indicators (wetland veg, etc.) are factors that need to have a certain status to get to our outcome. Ultimately, we don't want to just call it an indicator, we need to ask about what management actions need to happen to address those factors?

Dean – I ask MATs not to think about management actions, those are for APNEP's action teams to consider.

Kirk – Still think we should have that linkage.

Tim Ellis – If indicators can do both, that's ideal.

Kirk – Think that should be in people's minds, from a logic framework we want to be able to link things together.

Dean – Once we identify these indicators, we'll get into a discussion about what is a healthy value for each – how much plant cover is healthy, for example. Talking about concentrations, population sizes, etc. In our past ecosystem assessment, we talked about how metrics are changing over time. Want to be able to name a goal/standard – what "healthy" is.

Mike Schafale – For these indicators then, we need to have ones where we can define what healthy is. Need to know whether things are improving or not to make a standard.

Dean– Agree, if we can't know what healthy is then that's not a good indicator. These indicators are from the Phase I wetlands team, these are what they felt was important. We're asking if these are still valid, why we have partners with expertise here.

Ginny Baker – Last year, we only got to the indicator level, never started talking about metrics.

Michelle Henichek – Are these set in stone or can they be tweaked? How would you determine what a healthy population is? Would it be better to look at it as, how many stressors are affecting that wetland? More is less healthy, vice versa.

Dean – Traditionally, in the monitoring world it's been easier to measure the stressor. But what's important is the fauna, the fish, etc. We want to measure the thing we care about, and link it to the outcome. Can have a wetland endpoint that has five stressors that's still healthy.

Mike - Intensity of stressors is what matters.

Rick – Would be nice if we had a lot of baseline data. That's what we would base future trends on, there is some available. Some of these measures, we may not know what indicates healthy but if we have some baseline data that might indicate what healthy is.

Peter – Physiographic subregions in APNEP for which there is an HGM Guidebook already published will have guidelines already published.

Dean – We talked about the need, once we had indicators, to have assessment points. For example, for wetlands, one could be aboveground standing live biomass. Dean shows example in MAT guidance document.

Mike – But there are high marshes, low marshes, etc. Is this really reasonable for all settings?

Dean – First question, can we establish assessment points?

Mike – I see a lot of quantitative goals that are made up and are not pinned to ecosystem health, etc.

Dean – Would be nice to have reference points. Didn't do that in 2012 ecosystem assessment, so the reader just sees trends but no interpretation.

Peter – Are you talking about a stoplight model?

Dean – Red, green, yellow? That could be one way to do it. We plan to work with policy/outreach folks to create a citizen's report card. Other ways to do it as well.

Rick – One thing I noticed, chart applies only to salt marsh.

Dean – There would be different assessment points for different types of wetlands.

Mike – You have a large region where conditions are different for different wetland types. I would question whether a one size fits all, standing aboveground biomass is a good way to measure all salt marsh.

Dean – This is just an example.

Rick – We can come up with ranges for salt marshes, but due to differences in location some might not apply.

Mike – Don't want people to think something is broken if it isn't, this example seems too simplistic and it concerns me.

Dean – I just wanted to give an example of what an assessment point is. We can have different assessment points for different wetland types, geographic areas as long as they're broken into large chunks. As wetland ecologists, we need to be able to indicate if change in wetland condition is important.

Rick – We need to just say that a measurement is important even if we can't establish parameters.

Mike – We should resist establishing arbitrary boundaries.

Dean – This group will be in charge of that process.

Rick – We will have to agree that an indicator is important and then deal with the fact that the assessment point/metric might vary widely.

Ginny – By February you need the indicators, do you need exact metrics as well?

Dean – Yes.

Ginny – Do you need ranges?

Dean – No.

Ginny – Want basic list of indicators and associated metrics?

Dean – Yes, should have at least five where we feel comfortable saying that they're important, can begin gathering data. Going to roll out assessments and metrics as they're developed. Need comfortable set of indicators that this team feels comfortable with, feel comfortable saying that we'll use that to measure wetlands.

Kirk – Important to keep in mind that if you're putting out an indicator and you're deciding to do a particular management action, what do we expect to happen? If we don't know how an indicator will be affected by management actions, that's not a good indicator.

Dean – Logic model approach. Onus is determining which factors we should target to mitigate…that's the action team's responsibility as well as determining the management – the thing we'll be doing on the ground.

Kirk – They'll do a management action, see if it's having the effect you thought it would have. That's why you need an indicator that you can track and for which you have an idea of what will happen when you take a management action. Need to keep that in mind as we move forward.

Tim – Would be good for team to have a 1-2 sentence statement, talking about how each indicator will relate to management actions.

Kirk Havens – I can help with that.

Tim – Not trying to determine what's healthy and what's not right now, just providing some guidance to us and EPA going forward about why we picked what we did.

Dean shows model of ecosystem, showing factors affecting wetlands ecosystem. When we're talking about selection of metrics, I'm hoping that a list will get done today or we'll have action items to get this done before mid-February. If the team feels that more research is needed, we can also build towards a monitoring strategy.

Rick – If we feel that we have strong knowledge about an indicator/metric, that should go into the top five?

Dean – Yes.

Rick – Let's go through list and vet each, see if we can use them.

Ginny – List of indicators first and them metrics?

Peter– Five indicators or five metrics?

Rick Savage – We should choose indicators first.

Dean – Don't care, just want to get started. Want to make sure everyone's comfortable with this.

Rick – Mentally make check marks by things, we can come back.

Tim – To reiterate, if you go to the top of the document, you see the outcomes. Other teams are also working on those outcomes, don't feel like you have to cover all the outcomes. We're looking for what gives us the most information about the health of the wetlands, doesn't necessarily have to cover all outcomes.

Dean – Would suggest we need to have at least one indicator from the wetlands team to support that.

Tim – Struggling because of broad set of indicators, if each team picks five indicators with metrics underneath, we'll still have a list of 100 metrics. Trying to narrow this down, don't have to include things we don't feel strongly about.

Michelle– Since you've already looked at National Wetland Condition Assessment (NWCA) metrics, etc., would it be worth it since it's already been literature reviewed, to go through that and pick indicators from it?

Dean – These metrics were identified by an APNEP team and also identified by other groups.

Michelle – Was trying to help you narrow it down, you have a lot of broad goals and was trying to think of a way that you could narrow down those measurements.

Peter – Goes back to what Kirk said, in the end these things are going to have to be measured. Going to have to have a monitoring plan going forward. Idea of using existing information going forward is a good one.

Dean – With caveat that monitoring programs are collecting on behalf of their organizational mission, are collecting their own protocols.

Peter – No need to reinvent the wheel.

Dean – Agree, was trying to show people that this data is also being collected by others. But there are measurements that aren't being collected by others, could be important.

Dean – Example – for wetlands, wrack cover is important. APNEP would start a wrack cover monitoring program. Could it be done remotely, could it be done by citizens? Two different ways to think about it. Just because it doesn't have a high quality data set, doesn't mean that we shouldn't use it.

John Stanton – Observation, this concept of finding metrics or indicators that are already in place, I'd want to start there. Many times we try to recreate the wheel which we're trying to do that a little bit. Our time is better spent trying to locate and evaluate those metrics/indicators that are already in place that are being evaluated. We can tweak as needed but should start with the ones that are already being monitored. Let's try to find 2-3 that are already being done. Question for EPA – is there still a EPA Coastal Condition Index that is being monitored?

Dean – APNEP participated in National Coastal Condition Assessment monitoring in 2015.

John – That's where I would go immediately, team could endorse that index to start evaluation.

Dean – That mostly does things outside this team's purview.

Peter – NCCA is one of four rotating surveys, one is always being done each summer. Wetlands, coast, rivers and streams, lakes.

Michelle – All under the National Aquatic Resource Surveys (NARS).

John – Why is that outside this team?

Dean – For the coastal condition index, that would be largely the water resources and aquatic fauna teams.

John – That's semantics. All of us are working on 2A, I could see 2-3 team's work being captured under the coastal condition assessment.

Dean – Don't worry about another team taking it, that's for the STAC to sort out.

John – My proposal is that the team accepts the coastal condition index, and this team defaults to that off the bat.

Peter– Agrees.

Rick – Should accept wetlands assessment.

John – Nominates that as our top five before we step out of here.

Peter – Thought of five while I was in the shower this morning.

John – We could just go around and say indicators, all of those on the document are too general. I think this group could get more specific than that.

Dean – Before we get into that, we're going to go through this list that was made before and evaluate the list.

Rick – This was work that was done in the past.

Peter – Work that was done 10-15 years ago.

Dean – There's been a proposal from John to knock off some that are definitely in that core group of metrics. I thought we were going to go down the list this way but…

Peter – I think this will be quicker. Not trying to disrupt the flow, but for example when we get the first one, wetland vegetation, we can just say we're going to keep it.

Dean – APNEP staff is here to help facilitate, team lead is one of the APNEP partners. My job is to make sure all of this pulls into the big picture, goal is to get an ecosystem assessment out there with a solid wetlands component. Going to start going down through this list.

Dean – Any objection to wetland vegetation as an indicator? Something measured there?

Mike Schafale – I would agree that wetland vegetation is important, but I wouldn't choose those metrics – they're too vague.

Ginny – I agree, that's what I was trying to avoid. Metrics will take a long time.

Dean – Five minutes for each metric? Discuss, see where we are, see which member of the team should be working on it.

Peter – Before lunch, are we trying to agree on five indicators?

Dean – Forget about the number.

Peter– Okay, but are we talking about indicators?

Dean – Indicators and metrics.

Peter – So doing both at once.

Dean – We'll see how far we get.

Dean – Wetland native plant species presence is a metric. NERRS has included it in their assessment before.

Ginny – In wetland vegetation, since we do have NWCA, there's results from that work that was done that could feed into this.

Rick Savage – Agree.

Ginny – Could look at the metrics that have good results and use them.

Mike – Can someone tell us what those were?

Ginny – Some of them worked better than others, we'd have to look at what worked and get back together to discuss.

Michelle – They have a broad view and then take it down – water chemistry, soil, algae, etc….indicators within each broader topic.

Rick – Point being, if we're talking about native plant species presence, metrics on that are going to be interesting. We did species presence, cover, structure.

Mike – Did this in a plot study?

Rick – Yes.

Mike – Set of sample sites, sampled for vegetation parameters…

Dean – When I researched that, there was a mention of native species presence, cover, plant canopy height measure but for trees only. What I'm suggesting is that for the three that have 2016 next to them, we should try to adopt that protocol as best we can.

Mike – Earlier iterations, there were things that aren't here anymore. For example, rare species – very important but wasn't collected.

Dean – Seems like a modification of the NWCA protocol might be needed. Folks here can evaluate what they did in 2016, Mike can help suggest how we can edit/change that.

Peter – Did they do a Forest Quality Index?

Ginny – Something like that….

Ginny – 60 sites in 2011…

Rick – Most sites in APNEP region.

Ginny – Maybe 40-45 in APNEP region.

Dean – I'm going to take out "TBD" here, we agree that there is a metric of native plant species presence. Protocol needs to be TBD in our monitoring strategy.

Dean – Wetland plant cover, I would suggest that we're good with that. We can look at NWCA and select team members can determine what to do with that.

Mike – Need to consider community composition, this doesn't take rare plants or plants that impeded function. Think you would be better off integrating these metrics into an overall assessment.

John – Table these five metrics, subgroup will develop index based on NWCA.

Dean – Not all these are covered.

John – That's fine.

Dean – Wrack cover…multiple – strike that.

Mike – We don't know what the assessment point is for that.

Dean – Wetland plant species stem diameter, keep in as well?

Peter – Yes.

Dean – We've got these four metrics, we're good for now?

Mike – Not sure if I agree with this.

Others – Needs more work.

Peter – Canopy height, you're talking just about the average height of the biggest trees?

Dean – I don't know what the protocol is, but it was done in the 2016 effort.

Mike – If you want it to be meaningful, need some kind of measure of change. Best thing would be to make a change metric. Although it's something you can measure, probably better to see how much of wetland forest is being logged.

Kirk – And that's something you could take management action on.

Mike – Yes you could, not that you would, but you could tie that back to management action.

Dean – There are two programs out there measuring some kind of vertical structure.

Mike – But what you really care about is the trends.

Dean – All these wetland metrics care about the trends, it's interpreting those changes. If we define these, we'll be monitoring them over time.

Mike – If I see a metric that says that canopies should be 50 feet high, I will criticize you.
…continued discussion.

Dean – NCWA has wetlands scientists that has vetted those metrics, thus someone defended that.

Ginny – We added many wetland metrics in 2011 and they deleted some things in 2016…

Peter – We did not measure tree height in HGM, instead looked at basal area.

Dean – Any metric of vertical structure important or should we take that out?

Peter – Think it's important to have some measure of that. Thinking more about vertical diversity of the forest.

Mike – Different types of wetlands have different understories requirements, so depending on where you are the assessment point would be different.

Dean – As a place holder, can we have plant canopy height and do further research? Or change the name?

Rick – Adding word diversity

Mike – Community condition relative to reference

Rick– Agree with Mike – wetland community composition is important.

Mike– Must be interpreted differently for each community type.

Rick – So that's the super indicator and you have different … under that.

Ginny Baker – Could call it an index.

Rick – Wasn't thinking it would be an index.

Ginny – Index is made up of metrics, we're not in agreement of the metrics to be used.

Dean – So we have the wetlands community super index and supporting that are wetlands vegetation index, wetlands soil index, wetlands hydrology index, and under that are metrics for each of those. Index is equivalent to indicator in this case. Getting rid of wrack cover, these other four metrics could be contributing to the wetland vegetation component.

Mike – We should do something still to address rare species. There should be a separate metric for rare species.

Ginny – These metrics in general need to be reviewed.

Mike – Statewide database on rare species, not monitoring regularly but we know where they could be and could go out and monitor them. At least potentially amenable to quantitative assessment.

Kirk – Wetland-dependent rare species?

Mike – Separate APNEP committee for terrestrial things.

Dean – John is our point person on the birds, …

Peter – Talking about plants or birds?

Dean – Both.

Mike – Both.

Rick – Under vegetation, we're talking about plants in this instance.

Mike – Yes, but animals would be covered elsewhere.

Peter – What is happening with rare species?

Mike – Some increasing, decreasing, most want to be left alone. Need to be protected.

Dean – Motion to move to next indicator, will firm up metrics later.

John – Need two or three people to go through and do this.

Rick – Mike is familiar. Team will be Mike Schafale, Rick Savage, Peter Kalla.

Mike – Need to start over.

Peter – I would take some convincing to start over.

Rick – Whatever we come up with will reflect the information already gathered.

Mike – Want to rename things.

Peter – We need to utilize existing data.

Rick – We all need to look at and use USEPA NARS – NWCA for this process.

Dean – We need to move on. We now have the wetlands fauna superindex, herp index under that – under that, frogs, tadpoles, salamanders. At least one herptofauna index?

Peter – How about salamanders?

Dean – Applicable across region?

Peter – Applicable to all isolated wetlands. Don't know if anyone is monitoring salamanders in the region. Would mean that if we use that, we might have to spend money.

Rick – Never included in NWCA because you have to sample at certain times of the year.

Peter – Inclined to start with habitat and not monitor critters.

Rick – Not sure I would totally eliminate it. Salamanders are a pretty strong indicator, species are important too.

Mike – Certain number of known breeding sites that could be monitored.

Dean – Rick, monitor salamanders at your stations?

Rick – Yes.

Ginny – Wondering how many datasets are out there right now for amphibians. It's a more intensive survey.

Mike – Done in some places by some people, not sure where/who/how much. Museum has some people who do that. Focus is wherever they choose it to be.

[missed ~two minutes of discussion]

Ginny – Frog species would be a field measurement, could take that and put it into an index.

Mike – Would need skilled herpetologists to do surveys.

Ginny – Could take whatever is already out there and use that.

Mike – Harder to see herps versus plants.

John – Can I propose categorizing these indicators and metric as either Tier I or Tier II? Tier I is wetland vegetation, Tier II is herptofauna.

Peter – Does Tier II mean it's not going to make the top five?

Dean – Not necessarily. Whole thing is Tier II.

Rick – Ginny Baker, Rick Savage, Mike Schafale will take a closer look at herptofauna, Mike Schafale will talk to Nathan Shepard and may know what is being done.

Rick – Would it be worth it to talk to Alvin Braswell?

Mike – He's retired.

Rick – we talk to him a lot.

Dean – Birds? Tier I or Tier II?

Peter – Birds are easy, we have loads of data.

Rick – How many in wetlands?

John – I'm going to steer everyone to the North Carolina Colonial Waterbird Survey, done every three years, already worked on this for the SALCC (Sara Schweitzer of NCWRC), we can clip out what we did for them and use it here. We can call it APNEP's Waterbird Index. It's the best dataset we have for coastal birds.

Mike – That's a good one.

John – We've assigned a relative bird abundance ranking from 0-9, we can use that as a metric – trend or metric. They're dependent on the wetlands systems – nesting structure, food, bearing young. John Stanton is lead on that.

Dean – Criteria for selection for SALCC is that it has to be applicable to the entire region. Could there be birds not in their bird index that are important to the APNEP region?

John – SALCC was trying to find metrics that are cosmopolitan. But SALCC is very amenable to sub-analysis, would agree to do that for APNEP and that clip would capture the species particular to the APNEP region.

Dean – Reminder that there are wetlands outside the coastal area.

John– We'll capture freshwater systems and isolated wetlands as well.

Mike – Bigger concern is that there are birds that don't live in colonies.

John – Was going to reserve that for the terrestrial team. Wetlands Survey is the best we have.

Dean – Will refine metric to Colonial Waterbirds. Tier I metric.

Dean – That's a good dataset, sounds like that is something where we could begin to do an assessment.

John – Yes.

Dean – Are there any members beside John Stanton to contribute?

John – Glad to lead it solo, if anyone has an interest they can ring me up.

Rick – Travis Wilson from WRC.

John – Yes, I'll contact Travis.

Dean – Macroinvertebrates?

Rick – Not enough work has been done.

Ginny – Not familiar with snails.

Mike – why are snails there? Would think butterflies would make more sense. At least have an interested community for something like that.

Ginny – Is there information out there about what butterflies represent?

Mike – Seeing more/less of species, etc.

Dean – Any objection to butterflies as metric for macroinvertebrates? Tier II?

Peter – So people are monitoring butterflies?

Mike – People like butterflies, yet no one is monitoring them.

Dean– Could be citizen's monitoring contribution.

Kirk – Is that terrestrial?

Mike – Could be both.

Dean – Given that Mike is on both teams, he can coordinate the development of that metric. Mike Schafale is lead on that.

Dean – Now evaluating the indicators that reflect more the habitat side. First is algae. Metric – algal presence on emergent vegetation and sediment. …

Peter – So vague.

Ginny – Maybe you'd get more if there were more nutrients? Some wetlands might have an excessive amount of algae if there was excess nutrients. She would be okay with deleting algae metric.

Mike – Seems like algae in the water would be more useful, but that's water resources.

Peter – What kind of algae though?

Dean – Could be refined further, could focus on HABs.

Peter – Going down a rabbit hole with that. Team consensus to delete algae.

Dean – Wetland vegetation indicator …wetland landscape pattern index.

Mike – Main landscape issues are fragmentation, loss of habitat conductivity. Can calculate interior area given certain parameters, would give you a measure of fragmentation. Point of interior buffers is core area free of edge effect. Could say wetlands are getting more fragmented. Assuming someone is updating wetland map with frequency.

Ginny – NWI only one I can think of, haven't done it in a long time. No one has funded them to do it.

Mike/Ginny/Rick – NWI would be best.

Ginny – Overlay NWI with land cover index, comes out every five years. Would have to use GIS to overlay the two.

Mike – It's amenable to measurement.

Ginny – Has to be better defined though.

Mike – Fragmentation, interior area and conductivity.

Mike – Call it Wetland landscape fragmentation, interior area, and conductivity. Mike in charge of this, Tier II metric.

Peter – Question is getting someone to map the whole APNEP region. Need map of whole wetlands.

Kirk – We're trying to do that at VIMS using the new North Carolina-Virginia MOU. Going to be dated in some ways, going to be parceled by river basins.

Peter – Hydric soils?

Kirk – Not yet but could do that.

Peter – Digital elevation monitoring?

Kirk – Could, but right now just using NC-CREWS data.

Rick – Done in the 90's, mapping of coastal wetlands.

Ginny – Definitely would be nice to get it updated.

Rick – Agreed.

Dean – Map coincides with extent of wetland vegetation by type (Kirk Havens, Mike Schafale, Tier I)

Dean – Wetland hydrology indicator. Metric is alterations to natural flow regime.

Tim – Mention ecological flows?

Dean – An APNEP action team working on ecological flows.

Mike – Quantity/quality of water going down the streams. Might think of wetland ditching.

Rick – Yes, how does that play into wetlands.

Mike – Measuring miles of ditching, whether increased/decreased. Another is how many have sea level tide gates, issue that's only going to get bigger in the region.

Dean – You're suggesting ditching/diking?

Mike – Yes.

Peter – Hardened shorelines.

Mike – Tidal access to ditches. Major thing for wetland health going into the future.

Dean - Flows are important, Water Resources MAT has the lead.

Mike – Still want to keep it on our radar.

Rick – Make it a Tier II?

Ginny – Hydrology drives what's a wetland or not.

Rick – Yes, but that's not hydrology of all wetlands just a certain type.

Peter – I think it's Tier I. That's a major stressor.

Mike – I thought Tier I vs Tier II was whether we had data.

Peter – I thought it was importance.

Peter – I think we should add barriers to salt marsh regression.

Dean – Subset of hardened shorelines? Under Wetland Buffer – Barriers to salt marsh regression. Tier I. Peter Kalla lead.

Peter/Mike – Going to have to be a mapped/GIS product.

Wetland Hydrology – Tier I, Peter Kalla Lead. Tier I ditching.

Ginny – Seems like there should be an indicator that's landscape disturbance, under that is wetland vegetation, etc.

Peter – Says habitat in the outcome.

Rick – Sounds good, wetland landscape/habitat.

Ginny – Remove wetland vegetation and call that…discussion of where to put everything since algae was deleted.

Rick – Wetland Landscape super-indicator, like Wetland Communities, and then have sub-indicators underneath.

[KE took break, discussion of wetland buffers protocols]

BREAK FOR LUNCH

Rick – Now we'll continue with our list.

Dean – Now we're to the third outcome, it's about non-native invasives. We have one indicator and two metrics. Talking about invasive wetland species, there are two listed. The Phragmites metric was included in the 2012 APNEP assessment.

Peter – Is purple bluestripe in the drainage area?

Mike – I think the tatic is sound, having a metric looking for the presence of an invasive species.

Ginny – You might choose a primary invasive species, Phrag is coastal and Chinese privet is more inland. There are a whole bunch of invasive species.

Mike – Alligator weed is a big problem, in terms of wetlands, alligator weed and … Japanese honeysuckle, Microstegium, etc. [didn't catch all species]

Dean – Protocol for 2016 national wetlands assessment?

Peter – If it's on a transect, you note it.

Mike – You're going to note what's there.

Rick – Shouldn't say, I'm only looking for these.

Dean – Then leave it like it is? General?

Ginny – Whether it's invasive vs non-native is important.

Dean – Change to wetland non-native invasive plant species frequency and abundance. Tier I.

John – Need to have frequency, distribution. Presence/absence doesn't get us very far.

Peter – Can do frequency/abundance protocol.

Dean – Any member have a particular interest in this invasive issue? John Stanton and Ginny Baker volunteer.

Tim – Since you all talked earlier about looking at other plans, the North Carolina Aquatic Nuisance Species Management Plan prioritizes species for the state. Released in 2016, 100-page document.

John – Can you send to me? Tim Ellis – yes, will send to John.

Ginny – So if we found four to five other serious problem plants, you could include those in like the Phragmites extent metric but to use for other wetland types.

Rick – I thought Phragmites had already been assessed.

Mike – Another group is already doing this, I thought we didn't want a list of 15 separate things.
Dean – Invasives frequency abundance is wherever you have sites, we'll record invasives abundance.

Ginny – That's different, other is any invasive while this is finding those that are really aggressive. Just not found in every system.

Dean – Is the way we have it listed okay?

Peter – Is that because the others aren't easy to map?

Tim – We don't have the data for Phragmites either – just for state/public lands. Private lands, we don't have the data. But it's clearly an invasive of concern for the region.

Peter – I'm wondering why single it out?

Ginny – Same question.

John – I would assume it was up there because the knowledge at the time was that Phragmites was the biggest problem in the area.

Mike – If the North Carolina Coastal Federation is going to head up a group focused on Phragmites then let them do it. If you're looking at the whole region, Microstegium is probably the worst.

Dean – We'll leave it on there(?)

Discussion about what is an ecosystem stressor. Mike says that some of the ones not in the ecosystem stressor category, should be there. Unless we get rid of the ecosystem stressor category. Discussion of where to put soil morphology and soil chemistry.

Rick – I'm questioning the distinction. I'm not sure why that was done because you can define a lot of different things as stressors.

Mike – Sometimes it's more practical to measure things as a stressor, sometimes as a condition.

Dean – Soil could be a stressor.

Mike – A lot of things could be stressors.

Dean – Outcome indicators are linked to the services provided.

Mike/Rick – Do we really need this distinction? Not sure that we do.

Peter – Why are we even looking to measure soil morphology/chemistry?

Rick – Soil chemistry could give you information about what's polluting the wetland if that's the case.

Mike – Somebody thought it was worth putting here but I'm not sure why that's the case.

Dean – I'm returning to my defense, the NWCA looks at soil chemistry.

John – It looks at a lot of things we're not going to look at.

Ginny – It would tell us what kind of ecosystem it is.

Rick – History of the system.

Peter – If you look at the spreadsheet, ecosystem is the category, elemental cycles is the division…goes down to wetlands soils, stored elements and vegetation. Classified as an ecosystem stressor.

Dean – So we're saying there's no interpretive value to tracking soils?

Peter – It's expensive to get.

Ginny – Would get more from water quality.

Rick – I agree.

Peter – We already know that when the soil get drained, they oxidize. That's hydrology. I suppose someone was thinking that a decrease in carbon content indicates drainage.

Mike – It would be easier to look and see if there's drainage.

Soil condition as an indicator is deleted.

Discussion about measuring wetland gain/loss.

Dean – We can measure total gain/loss, and say how much of that was permitted.

Peter – How can one say there's no net loss if they use preservation as mitigation?

Mike – You do these so-called restorations that really don't restore natural function.

Ginny – You aren't going to be able to get information about that very easily. We have low standards for that. For hydrology, they only have to get…

Rick – They use the hydrological definition for the wetland to make the case that they made the wetland.

Peter – So you're saying that information is hard to come by? Then forget it. I say we keep the wetland loss and forget about the restoration. We should count permitted losses and not count so-called gains.

Rick – I agree with you in principle but it's going to fly in the face of a lot of people. If we use that as a metric for the indicators here and report that to the world, somebody's going to say, you didn't look at mitigation sites. It's not like every mitigated wetland is a disaster.

Ginny – Some of them are going to be very successful but it's going to take 30-40 years, they only have to monitor for seven years.

Ginny – I think you can include that in here but say that we don't have information about the quality of loss but the replacement is a new wetland.

Peter – I think we should put permitted losses in there and take it out later if we need to.

General agreement that it's worthwhile, but has political/logistical/data analysis caveats. Decision that it will be included, but it won't be a specific wetland outcome.

Peter – Why would that not be an outcome?

Dean– We do, when we create the model, it will be a factor.

Mike – Could we also look at wetland vegetation condition in addition to type?

Baker – Permitting data won't be useful to get us an answer to that question.

Mike – Maybe permitted losses should be it's own metric, under ecosystem stressors.

Peter – Other thing was Section 44F, the exemptions. I don't know what the permitting requirements are except that they have to do BMPs, but that's a major source of loss of isolated wetlands.

Mike – Source of reduced function.

Ginny – Is that just USFS?

Peter – No private silviculture/farming.

Dean – So you're suggesting that should be another entry?

Rick – You're allowed to take a wetland for farming purposes and I think silviculture too.

Peter – If it's been under continuous use since the 1960's…

John – If it was drained prior to 1984 and reconstituted it can be drained to make farmland [unsure if this is recorded exactly correct].

Rick – In other words, I cannot convert a wetland into agriculture without permitting? That's interesting.

Peter – Timber companies planting right through isolated wetlands are a major source of loss, not sure what the reporting requirements are.

Mike – I wish there was some way to get at major alterations of wetlands that don't take them out of wetlands status, type conversions, maybe extent of wetland vegetation by type will get at that.

Peter – It should, if you have all the data layers.

Mike – One thing we had in the earlier iteration that we don't have now, is to track examples of the highest quality wetlands. We have records of where the best examples of each community type can be found, it's pretty easy to tell how many are still there. That's still a significant loss.

Peter – We know where they are, we have every reason to believe they are being lost at some rate. Does North Carolina DOT fly aerial photography every year? Digitized?

Mike – Dept. of Agriculture, sometimes digitized.

Ginny – Seems like in recent years there's been enough. Further discussion on this topic.

Dean – Interesting, habitats fall along a bell curve, challenge for regulatory agencies is to push degraded things up to okay, less attention on the pristine areas. Maybe could have a monitoring effort that focuses attention on tracking high quality sites.

Mike – That's what I'm suggesting.

Dean – Could do for uplands, etc. APNEP would be fulfilling the protection aspect of the CCMP. For those indicators in healthy status, maybe we should track them to make sure they don't degrade.

Mike – That's what the natural heritage program does, is that something you think is feasible?

Rick – That cuts across teams, is an issue for the STAC to look at as a whole. Bring it up with the STAC.

Dean – I think that's a great idea and something we should have a discussion about.

Pete – What about tracking wetlands in public ownership (NGOs, governments)?

Dean – Could have a category for ownership of wetlands and track it over time (e.g., conservation status by type).

Mike – A managed areas layer would be potentially low-hanging fruit.

Dean – Tier I, pretty solid on those. Tier II, more research is needed before we define exactly what we're going to measure for those. Tier II, we didn't have enough information to flesh out the indicators. I propose that I'll take this refined list, immediately send it out to the entire team and get folks involved. Get out there, do the research, and schedule a call probably around Feb. 12 where we have the vetting and getting the information a few days to a week before the actual phone call. If a metric does reach Tier I now, doesn't mean we have to kick it out, just means we might be deferring it.

Rick – Work for Tier I indicators, we aren't doing that until after Feb 16?

Dean – I'd like to take a look at it before to see what the metric would be. I'd like this done before then.

Discussion of if this is possible in the given time frame. Resources shared amongst the group. Rick will send 2011 NWCA report to Mike. Consensus is just to stick with 2011 report, changes with vegetation were small.

Dean– That's going to be the team's near-term effort until mid-February.

Dean – Next question is, for which metrics are we going to start assessing and develop monitoring protocols?

John – After the STAC meeting?

Dean – Yes, we'll get their feedback and then go back to the team and see which members can help us push a particular metric forward.

Peter – You want that in time for the visit?

Dean – All I need…we're going to talk about each of the MATs, those metrics will be incorporated in APNEP's program review package given to EPA. I do want to get the policy folks involved in weighing in on these metrics as well.

Peter – Top five? Still looking for a ranking?

Dean – No, in March after approval, I'll make a request to the wetlands team and we'll see how we can get rolling on developing them. A lot of factors involved there, maybe we can get rolling on Tier I measurements.

Rick – Do we want to set a target time for next face to face?

Dean – Want to schedule call two and four months out, then in person six months out. Thoughts about getting together in six months' time?

Peter – What's left to talk about?

Dean – Details from the metrics, how we assess them, monitoring strategy. Get really in depth about how we're doing.

Rick – Is July a bad time?

Ginny – Travis, Michelle, etc. – probably later is better, like later September.

Dean – Whole first question is, do we want to schedule it that far out?

Peter – September is our busiest month.

Dean – At our next discussion, we can discuss.

Peter – What is the format for this getting going thing? What does that look like?

Dean – Assessment will be a technical assessment, like 2012 format. 3-5 page document, why is this indicator important, what data do we have, why can't we fully report on it now. Going to be on the order of a five-page document, report card for general citizens will be a one-to-two-page document. Maybe only one of the metrics featured in the technical assessment will be used for the report card. That will be the technical basis for a general public document.

Rick – Anything anyone needs to voice? Anyone else to add to this team? Consensus is that team represents various APNEP wetland partners well as is.

Team adjourned.